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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,087	06/21/2000	Anthony J. Polverino	00,450	6624

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1642	15

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/599,087	Applicant(s) LUETHY ET AL.	
	Examiner Stephen L. Rawlings, Ph.D.	Art Unit 1642	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12-45 and 49-59* is/are pending in the application.

4a) Of the above claim(s) *9,12-45 and 49-59* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-9,12-45 and 49-59* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The amendment filed February 11, 2002 in Paper No. 13 is acknowledged and has been entered. Claims 10, 11, and 46-48 have been canceled. Claims 1-3 have been amended.

2. The declaration under 37 CFR § 1.131 by Anthony J. Polverino filed February 11, 2002 in Paper No. 13 is acknowledged and has been entered.

3. The amendment filed May 17, 2002 in Paper No. 14 is acknowledged and has been entered. Claims 1-3 and 8 have been amended.

4. Claims 1-9, 12-45, and 49-59 are pending in the application. Claims 9, 12-45, and 49-59 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non-elected invention, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in Paper No. 9.

5. Claims 1-8 are currently under prosecution.

Response to the Declaration under 37 CFR § 1.131

6. The declaration under 37 CFR § 1.131 by Anthony J. Polverino has been considered but is ineffective to overcome the FAPESP/LICR Human Cancer Genome Project reference. The evidence submitted is insufficient to establish a conception of the invention before, or to establish a reduction to practice of the invention before or after the date that the FAPESP/LICR Human Cancer Genome Project reference established that the subject matter encompassed by the claims was known or used by another in this country. Furthermore, Applicants' explanation of the accompanying evidentiary document, which Applicants have asserted documents a reduction to practice before February 1, 2000 is insufficient, since the declaration has failed to state

how or why the document shows that a reduction to practice occurred before the sworn to date. Moreover, it is not immediately evident that the document provides a showing that is reasonably commensurate with the claims of this application.

Grounds of Claim Objections Withdrawn

7. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 1-8, 10, 11, and 46-48 had been objected to because the claims are drawn in the alternative to non-elected inventions. In reply to the previous Office Action, Applicants have canceled claims 10, 11, and 46-48 and amended claims 1-3 to render this ground of objection moot. Accordingly, the objection to claims 1-8, 10, 11, and 46-48 is withdrawn.

Grounds of Claim Rejections Withdrawn

8. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 1-8, 10, 11, and 46-48 had been rejected under 35 USC § 112, first paragraph for the reasons set forth in section 7 of that Office Action. In reply to the previous Office Action Applicants have canceled claims 10, 11, and 46-48. Furthermore, Applicants have amended claims 1-8, 10, 11, and 46-48, thus rendering the grounds of rejection of the claims moot. Therefore, the rejection of claims 1-8, 10, 11, and 46-48 under 35 USC § 112, first paragraph for the reasons stated in section 7 of the previous Office Action is withdrawn.

9. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 46-48 had been rejected under 35 USC § 112, first paragraph for the reasons set forth in section 8 of that Office Action. In reply Applicants have canceled claims 46-48, thus rendering the grounds of rejection of the claims moot. Therefore, the rejection of claims 46-48 under 35 USC § 112, first paragraph is withdrawn.

10. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 10, 11, and 46-48 had been rejected under 35 USC § 112, first paragraph for the reasons

set forth in section 9 of that Office Action. In reply Applicants have canceled claims 10, 11, and 46-48, thus rendering the grounds of rejection of the claims moot. Therefore, the rejection of claims 10, 11, and 46-48 under 35 USC § 112, first paragraph is withdrawn.

11. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 1-8, 10, 11, and 46-48 had been rejected under 35 USC § 112, second paragraph for the reasons set forth in section 11 of that Office Action. In reply Applicants have canceled claims 10, 11, and 46-48 and amended claims 1-3, thus rendering the grounds of rejection of claims 1-8, 10, 11, and 46-48 moot. Therefore, the rejection of claims 1-8, 10, 11, and 46-48 under 35 USC § 112, second paragraph is withdrawn.

12. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claim 11 had been rejected under 35 USC § 102 for the reasons set forth in sections 13 and 14 of that Office Action. In reply Applicants have canceled claim 11, thus rendering the grounds of rejection of the claim moot. Therefore, the rejection of claim 11 under 35 USC § 102 is withdrawn.

13. In the previous Office Action mailed August 9, 2001 (Paper No. 11), claims 1, 10, and 11 had been rejected under 35 USC § 103 for the reasons set forth in sections 16 and 17 of that Office Action. In reply Applicants have canceled claims 10 and 11 and amended claim 1, thus rendering the grounds of rejection of the claims moot. Therefore, the rejection of claims 1, 10, and 11 under 35 USC § 103 is withdrawn.

Grounds of Claim Rejections Withdrawn and Reply to Applicants' Remarks

Claim Rejections - 35 USC § 112

14. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make

and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15. Claims 3-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for the reasons set forth in section 7 of the previous Office Action mailed August 9, 2001 (Paper No. 11).

The written description sets forth SEQ ID NO: 4, which is the polynucleotide sequence of a cDNA encoding the human polypeptide designated Secs-1. In addition, the written description includes a disclosure of the polynucleotide sequence (i.e., SEQ ID NO: 8) of a genomic DNA molecule that encodes the human Secs-1 polypeptide (Figure 4). The written description also set forth in SEQ ID NO: 1, the polynucleotide sequence of a cDNA encoding an ortholog of the human Secs-1 polypeptide, namely the mouse Secs-1 (or muSmac2) polypeptide.

Claim 3, however, encompasses a far broader genus of nucleic acid molecules, and, for example, encompasses naturally occurring alleles that encode variants of Secs-1 and alternatively spliced messenger RNA molecules, which might encode isoforms of Secs-1. Moreover, claim 3 encompasses isolated nucleic acid molecules encoding polypeptides comprising the amino acid sequence set forth in SEQ ID NO: 5 wherein at least one modification has been made, including deletions, insertions, substitutions, and truncations, provided that the polypeptides encoded by the nucleic acid molecules to produce upon injection into an animal, an antibody that binds the polypeptide having the amino acid sequence set forth in SEQ ID NO: 5. Consequently, given the broadest reasonable interpretation, the claims encompass a very large genus of isolated nucleic acid molecules that encode a polypeptide that shares any one antigenic determinant with the polypeptide of SEQ ID NO: 5.

For the reasons stated in the previous Office Action, the disclosure of three species of the claimed genus of nucleic acid molecules encoding Secs-1-like polypeptides, namely SEQ ID NO: 1, 4, and 8 is considered insufficient to meet the written description requirement of 35 USC § 112, first paragraph, as the structures and

polynucleotide sequences of the vast majority of the members of the claimed genus of nucleic acid molecules are not disclosed in the specification and SEQ ID NO: 1, 4, and 8 are not representative of the genus as a whole. More particularly, the structures and polynucleotide sequences of the claimed nucleic acid molecule encoding polypeptides that comprise the amino acid sequence of an allelic variant or splice variant of the amino acid sequence of SEQ ID NO: 5 are not disclosed. In accordance, the claimed subject matter is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time the application was filed.

The specification fails to describe the biologic activities or function of the polypeptide of SEQ ID NO: 5; and there is no description of the conserved regions that are critical to the structure and function of the polypeptide encoded by the claimed genus of nucleic acid molecules. Furthermore, there is no description of the sites at which variability may be tolerated and there is no information regarding the relation of the polypeptide's structure to its function. The prior art does not provide compensatory structural or correlative teachings sufficient to enable one of skill to isolate and identify the polypeptides encompassed by the claims. Therefore, because the amino acid sequences of the polypeptides encoded by the claimed genus of nucleic acid molecules are not disclosed and because no identifying characteristic or property is provided, the skilled artisan certainly cannot envision the structures and sequences of the claimed nucleic acid molecules encoding those polypeptides. Moreover, one skilled in the art cannot reasonably identify those nucleic acid molecules that are encompassed by the claims. In other words, the specification fails to describe the common attributes or characteristics that identify at least a substantial number of the members of the claimed genus. Additionally, although claim 3 requires the polypeptides encoded by the members of the claimed genus of nucleic acid molecules to be immunogenic and produce an antibody or antibodies that bind the polypeptide of SEQ ID NO: 5, the recitation of this limitation does not sufficiently delineate the claimed genus or describe the members of the claimed genus so that the skilled artisan could instantly recognize or envision at least a reasonable number of the members of the claimed genus, since

the recitation is merely a description of what the polypeptides encoded by the claimed nucleic acid molecules must be capable of doing, and not a description of what the nucleic acid molecules are. Consequently, the disclosure is insufficient to meet the written description requirement of 35 USC 112, first paragraph.

Applicants have traversed these grounds of rejection under 35 USC § 112, first paragraph in Paper No. 13. In particular, Applicants have argued that deletion of the "objected-to limitation of 'at least about 70% identical' from the pending claims" (page 4, paragraph 3) has overcome these grounds of rejection.

Applicants' arguments have been carefully considered but not found persuasive. Although Applicants have amended the claims to delete the "objected-to limitation of 'at least about 70% identical' from the pending claims", claim 3 still encompasses a large genus of nucleic acid molecules encoding polypeptides, the majority of which have not been described in the specification, since the claims only require the nucleic acid to encode a polypeptide that has an amino acid sequence that differs from the amino acid sequence set forth in SEQ ID NO: 5, provided that the polypeptide produces upon injection into an animal, an antibody that binds the polypeptide having the amino acid sequence set forth in SEQ ID NO: 5. Again, the recitation of the latter limitation does not sufficiently delineate the claimed genus or describe the members of the claimed genus so that the skilled artisan could instantly recognize or envision at least a reasonable number of the members of the claimed genus, since the recitation is merely a description of what the polypeptides encoded by the claimed nucleic acid molecules must be capable of doing, and not a description of what the nucleic acid molecules are. Therefore, the rejection of claims 3-8 under 35 USC § 112, first paragraph for the reasons stated in the previous Office Action and reiterated above is maintained.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 2 and 3 are rejected under 35 U.S.C. 102(a) as being anticipated by the FAPESP/LICR Human Cancer Genome Project (GenBank EST Database Accession No. AW351839, 1999), as evidenced by a USPTO database search using SEQ ID NO: 5 as a query (see USPTO Search Report US-09-599-087-5.rst, result 1), for the reasons stated in section 13 of the previous Office Action mailed August 9, 2001 (Paper No. 11).

The FAPESP/LICR Human Cancer Genome Project teach the polynucleotide sequence of an isolated nucleic acid molecule encoding an amino acid sequence that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5.

Applicants have traversed the grounds of rejection of claims 2 and 3 under 35 USC § 102(a) in Paper Nos. 13 and 14, asserting that the declaration under 37 CFR § 1.131 by Anthony J. Polverino establishes that the invention was conceived and reduced to practice by Applicants before February 1, 2000. Furthermore, in Paper No. 14, Applicants have asserted that "[w]hile the nucleotide sequence disclosed by the FAPESP/LICR Human Genome Project may have been submitted sometime in 1999 [...], Applicants contend that the sequence was not accessible to the public until February 1, 2000 [...], and therefore, not publicly known until that date" (page 4, paragraph 4). Accordingly, Applicants have asserted that the declaration by Anthony J. Polverino filed February 11, 2002 is sufficient to antedate the FAPESP/LICR Human Genome Project reference. Additionally, Applicants have remarked, "Applicants contend that when the nucleotide sequence set forth in SEQ ID NO: 4 was obtained, the claimed invention was reduced to practice" (page 5, paragraph 2).

However, in reply to Applicants' argument, since the FAPESP/LICR Human Genome Project deposited the sequence in the database in 1999, it is evident that "the invention was known or used by others in this country [...] before the invention thereof by applicant for patent" (35 USC § 102(a)). Additionally, contrary to Applicants'

inference, the grounds of rejection at issue in this instance are not analogous to those reviewed by the court in *Carella v. Starlight Archery*, 231 USPQ 644 (CAFC, 1986), as the FAPESP/LICR Human Genome Project reference is not an advertisement published by the Applicants, but a prior disclosure of the same subject matter that Applicants regard as their invention by another before the invention thereof by Applicants. As Applicants have noted in their remarks, in *Carella* the court stated, "[t]he statutory language, 'known or used by others in this country' (35 U.S.C. §102(a)), means knowledge or use which is accessible to the public. *In re Bass*, 474 F.2d 1276, 1296, 177 USPQ 178, 193 (CCPA 1973) (Baldwin, J., concurring); *In re Borst*, 345 F.2d 851, 854, 145 USPQ 554, 556 (CCPA 1965); see also, *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1453, 223 USPQ 603, 614 (Fed. Cir. 1984)." Id. at 646. Therein, the court determined "there was no credible evidence in the record indicating the Rite-Flite sight was known or used by, or was otherwise accessible to, the public until after the mailing of the WBHA advertisement on August 17, 1966. Id. However, in view of the FAPESP/LICR Human Genome Project reference, it is evident that members of the public other than the Applicants deposited the polynucleotide sequence of a nucleic acid molecule encompassed by the claims into the database in 1999, before Applicants conceived and reduced to practice the claimed invention, and did so without benefit or need for any of Applicants' disclosures. In Carella, the court cited *In re Bass*, 474 F.2d 1276, 1296, 177 USPQ 178, 193 (CCPA 1973) (Baldwin, J., concurring), and therein, at 193, the court stated:

> The court held that "not known or used" meant not publicly known or used by others:
>
> > What then is the true meaning of the words "not known or used before the application?" They cannot mean, that the thing invented was not known or used before the application, by the inventor himself, for that would be to prohibit him from the only means of obtaining a patent. The words, then, to have any rational interpretation, must mean, not known or used by others, before the application. But how known or used? If it were necessary, as it well might be, to employ others to assist in the original structure or use by the inventor himself, or if before his application for a patent, his invention should be pirated by another, or used without his consent, it can scarcely be supposed, that the legislature had within its contemplation such knowledge or use.

> We think, then, the true meaning must be, not known or used by the public, before the application. [5]
>
> The validity of the above reasoning has not diminished one scintilla in the 143 years since it was put down on paper.

Again, the FAPESP/LICR Human Genome Project reference documents that a member of the public other than the Applicants had possession of the claimed invention before the earliest effective filing date of this application in 1999. For this reason, the declaration under 37 CFR § 1.131 by Anthony J. Polverino is not sufficient to antedate reference.

Furthermore, as noted above, Applicants explanation of the accompanying evidentiary document, which Applicants have asserted documents a reduction to practice before February 1, 2000 is insufficient, because the declaration has failed to state how or why the document purportedly shows that a reduction to practice occurred before the sworn to date. Moreover, it is not immediately evident that the document provides a showing that is reasonably commensurate with the claims of this application.

Also, since Applicants have remarked in Paper No. 14 that "when the nucleotide sequence set forth in SEQ ID NO: 4 was obtained, the claimed invention was reduced to practice", by the same token, it seems that once the FAPESP/LICR Human Cancer Genome Project obtained the sequence that is now deposited in the database GenBank under the accession number AA422178, a reduction to practice of the claimed invention had occurred. Since as evidenced by the cited disclosure of the FAPESP/LICR Human Cancer Genome Project, the reduction to practice of the claimed invention by the FAPESP/LICR Human Cancer Genome Project occurred before Applicants' reduction to practice of the claimed invention, it appears that Applicants were not the first to invention the subject matter claimed in this application.

Accordingly, Applicants' arguments set forth in traversing the grounds of the rejection of claims 2 and 3 under 35 USC §102(a) for the reasons stated in the previous Office Action have been carefully considered but not found to be persuasive. Therefore, the rejection of claims 2 and 3 under 35 USC §102(a) as being anticipated by the FAPESP/LICR Human Cancer Genome Project is maintained.

18. Claims 2 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hillier, et al (GenBank EST Database Accession No. AA422178, 1997), as evidenced by a USPTO database search using SEQ ID NO: 5 as a query (see USPTO Search Report US-09-599-087-5.rst, result 2), for the reasons stated in the previous Office Action mailed August 9, 2001 (Paper No. 11).

Hillier, et al teach the polynucleotide sequence of an isolated nucleic acid molecule encoding an amino acid sequence that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5 over the region spanning from the amino acid at position 1 to the amino acid at position 76. Therefore, the isolated nucleic acid molecule of Hillier, et al encodes a polypeptide that is truncated at the C-terminus, encoding a fragment of SEQ ID NO: 5 comprising at least about 25 amino acid residues.

In Paper No. 13, Applicants have traversed these grounds of rejection arguing that Hillier, et al does not teach "the amino acid sequence of Secs-1 polypeptide" (page 6, paragraph 5). Furthermore, Applicants have submitted evidence that polynucleotide sequence set forth in the prior art is not the same as the nucleotide sequence set forth in SEQ ID NO: 4. Applicants also have argued that Hillier, et al does not teach the amino acid sequence of any protein and that one would not be able to determine the open-reading frame that encodes polypeptide of SEQ ID NO: 5 without the benefit of Applicants' disclosure. Finally, Applicants have contended that a stop codon encoded by the nucleic acid of the prior art at positions corresponding to positions 272-274 of the polynucleotide sequence set forth in SEQ ID NO: 4 distinguishes the nucleic acid molecule of the prior art from the nucleic acid molecule of the claims.

Then in Paper No. 14, Applicants have argued that the nucleic acid molecule of Hillier, et al differs from the claimed nucleic acid molecule because the nucleic acid molecule of Hillier, et al encodes a polypeptide that differs from the polypeptide of SEQ ID NO: 5 and have further asserted that the polypeptide encoded by the nucleic acid molecule of Hillier, et al comprises an additional 17 amino acids at its C-terminus, which are not present in the amino acid sequence set forth in SEQ ID NO: 5. Additionally,

although Applicants have contended that the nucleic acid molecule of Hillier, et al does not anticipate the claimed invention for these reasons, Applicants have also amended claim 3 to recite an additional limitation requiring the claimed nucleic acid molecules to encode a polypeptide comprising an amino acid sequence that does not comprise the amino acid sequence set forth in SEQ ID NO: 22.

In response to Applicants' arguments it is appropriately noted that the claims are not limited to a nucleic acid molecule comprising the polynucleotide sequence set forth in SEQ ID NO: 4, or to a nucleic acid molecule encoding a polypeptide consisting of, or comprising the amino acid sequence set forth in SEQ ID NO: 5. As stated in the previous Office Action, Hillier, et al teaches the polynucleotide sequence of an isolated nucleic acid molecule that encodes an amino acid sequence that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5 over the region spanning from the amino acid at position 1 to the amino acid at position 76. Therefore, the isolated nucleic acid molecule of Hillier, et al encodes a polypeptide that is truncated at the C-terminus, encoding a fragment of SEQ ID NO: 5 comprising at least about 25 amino acid residues. Accordingly, contrary to Applicants' arguments, the teachings of Hillier, et al appear to anticipate subject matter encompassed by the claims.

Contrary to Applicants' arguments, claim 2 is not exclusive of a nucleic acid molecule that encodes a polypeptide that is larger than 80 amino acids; in fact, the number of amino acids of which the polypeptide encoded by the nucleic acid molecule is not limited by the claim. Claim 2 merely requires the nucleic acid molecule to comprise a polynucleotide sequence that comprises a region of the polynucleotide sequence of SEQ ID NO: 4 or the DNA insert of ATCC Deposit No. PTA-1755 that encodes a polypeptide of at least 25 amino acids in length.

Applicants have asserted that the nucleic acid molecule of Hillier, et al encodes a polypeptide that comprises an additional 17 amino acids at its C-terminus, which are not present in the amino acid sequence set forth in SEQ ID NO: 5. However, the presence of any additional amino acids in the amino acid sequence of a polypeptide encoded by a nucleic acid molecule of the prior art does not serve to distinguish the nucleic acid molecule of the prior art from the nucleic acid molecule of the claims, because the

claims only require the nucleic acid molecule to have a polynucleotide sequence that comprises a region of SEQ ID NO: 4 or the DNA insert in ATCC Deposit No. PTA-1755 that encodes a polypeptide of at least 25 amino acids. Although the nucleic acid molecule of Hillier, et al may encode a polypeptide that comprises an additional 17 amino acids at its C-terminus following the amino acid within its amino acid sequence that corresponds to the amino acid at position 76 of SEQ ID NO: 5, which are not encoded by the polynucleotide sequence set forth in SEQ ID NO: 4, the nucleic acid molecule of Hillier, et al has a polynucleotide sequence that comprises a region of the polynucleotide sequence of SEQ ID NO: 4 that encodes a polypeptide that at least 25 amino acids in length, i.e., 76 amino acids in length.

The amino acid sequence encoded by a nucleic acid molecule is an inherent property of the nucleic acid molecule. Moreover, the open reading frame of a nucleic acid molecule that is utilized during translation is also an inherent property of the nucleic acid molecule, and either the nucleic acid molecule of Hillier, et al encodes a polypeptide having an amino acid sequence that meets the limitations of the claims, or it does not, but there is a reasonable expectation that it does. Furthermore, as the nucleic acid molecule of Hillier, et al encodes an amino acid sequence that is 100% identical to a 76-amino acid fragment of SEQ ID NO: 5, it is reasonable to expect that the polypeptide encoded by the nucleic acid molecule of Hillier, et al upon injection into an animal, would produce an antibody that binds the polypeptide of SEQ ID NO: 5. Therefore, the nucleic acid molecule of the prior art is deemed the same as the nucleic acid molecule of the claims, absent a showing of any difference. The office does not have the facilities for examining and comparing Applicants' product with the product of the prior art in order to establish that the product of the prior art does not possess the same material, structural, and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is upon the Applicants to prove that the claimed nucleic acid molecules are functionally different than those taught by the prior art and to establish patentable differences.

Finally, although claim 3 recites a provision requiring the polypeptide encoded by the nucleic acid molecule not to comprise the amino acid sequence set forth in SEQ ID

NO: 22, SEQ ID NO: 22 is not defined in the specification or by the claim. Therefore, the provision recited in claim 3 has not been given any weight in comparing the product of the prior art and the product of the claim.

Therefore, Applicants' arguments have been carefully considered but have not been found persuasive and the rejection of claims 2 and 3 under 35 USC § 102(b) for the reasons stated in the previous Office Action is maintained.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over The FAPESP/LICR Human Cancer Genome Project (GenBank EST Database Accession No. AW351839, 1999), as evidenced by a USPTO database search using SEQ ID NO: 5 as a query (see USPTO Search Report US-09-599-087-5.rst, result 1), for the reasons stated in the previous Office Action mailed August 9, 2001 (Paper No. 11).

The FAPESP/LICR Human Cancer Genome Project teach the polynucleotide sequence of an isolated nucleic acid molecule encoding an amino acid sequence that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5. However, the FAPESP/LICR Human Cancer Genome Project do not disclose a vector comprising the prior art nucleic acid, a host cell comprising said vector, or a process for producing the polypeptide encoded by said nucleic acid. Nevertheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make and use an expression vector comprising the nucleic acid molecule of the FAPESP/LICR Human Cancer Genome Project so that the polypeptide comprising the amino acid sequence of SEQ ID NO: 5 could be produced. Methods for construction of expression vectors, methods for introduction of expression vectors into eukaryotic and prokaryotic host

cells, and methods for production of polypeptides encoded by expression vectors was conventional at the time the invention was made. One of ordinary skill in the art at the time the invention was made would have been motivated to make and use an expression vector comprising the nucleic acid molecule of the FAPESP/LICR Human Cancer Genome Project so that the polypeptide comprising the amino acid sequence of SEQ ID NO: 5 could be produced, because the polypeptide could be used to produce antibodies that specifically bind the polypeptide and antibodies are useful tools for studying the biologic function of a given polypeptide.

Applicants have traversed the grounds of rejection of claims 1-8 under 35 USC § 103(a) in Paper Nos. 13 and 14, asserting that the declaration under 37 CFR § 1.131 by Anthony J. Polverino establishes that the invention was conceived and reduced to practice by Applicants before February 1, 2000, so that the reference is not available as prior art under 35 USC § 102(a). Furthermore, Applicants have asserted that the invention would not have been obvious over the reference, but fail to state a supportive reason for their assertion.

Applicants' arguments have been carefully considered but have not been found persuasive for the reasons set forth above in replying to Applicants' traversal of the rejection of the claims under 35 USC § 102(a). As Applicants have failed to provide any reason that the invention would not have been obvious to one of ordinary skill in the art at the time the invention was made, the rejection of claims 2-8 under 35 USC § 103(a) over the disclosure of the FAPESP/LICR Human Genome Project is maintained.

21. Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hillier, et al (GenBank EST Database Accession No. AA422178, 1997), as evidenced by a USPTO database search using SEQ ID NO: 5 as a query (see USPTO Search Report US-09-599-087-5.rst, result 2) for the reasons stated in the previous Office Action mailed August 9, 2001 (Paper No. 11).

Hillier, et al teach the polynucleotide sequence of an isolated nucleic acid molecule encoding an amino acid sequence that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5 over the region spanning from the amino acid at

position 1 to the amino acid at position 76. Therefore, the isolated nucleic acid molecule of Hillier, et al encodes a polypeptide that is truncated at the C-terminus, encoding a fragment of SEQ ID NO: 5 comprising at least about 25 amino acid residues. However, Hillier, et al do not disclose a vector comprising the prior art nucleic acid, a host cell comprising said vector, or a process for producing the polypeptide encoded by said nucleic acid. Nevertheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make and use an expression vector comprising the nucleic acid molecule of Hillier, et al so that the polypeptide comprising the amino acid sequence of SEQ ID NO: 5 could be produced. Methods for construction of expression vectors, methods for introduction of expression vectors into eukaryotic and prokaryotic host cells, and methods for production of polypeptides encoded by expression vectors was conventional at the time the invention was made. One of ordinary skill in the art at the time the invention was made would have been motivated to make and use an expression vector comprising the nucleic acid molecule of Hillier, et al so that the polypeptide comprising the amino acid sequence of SEQ ID NO: 5 could be produced, because the polypeptide could be used to produce antibodies that specifically bind the polypeptide and antibodies are useful tools for studying the biologic function of a given polypeptide.

Applicants have traversed these grounds of rejection arguing that Hillier, et al does not teach the amino acid sequence of Secs-1 polypeptide and have submitted evidence that polynucleotide sequence set forth in the prior art is not the same as the nucleotide sequence set forth in SEQ ID NO: 4. Applicants have also argued that Hillier, et al does not teach the amino acid sequence of any protein and that one would not be able to determine the open-reading frame that encodes polypeptide of SEQ ID NO: 5 without the benefit of Applicants' disclosure. Finally, Applicants have contended that a stop codon encoded by the nucleic acid of the prior art at positions corresponding to positions 272-274 of the polynucleotide sequence set forth in SEQ ID NO: 4 distinguishes the nucleic acid molecule of the prior art from the nucleic acid molecule of the claims.

Applicants' arguments have been carefully considered but have not been found persuasive for the reasons set forth above in replying to Applicants' traversal of the rejection of the claims under 35 USC § 102(b). Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed an analysis of the polynucleotide sequence of the nucleic acid molecule of Hillier, et al and to thereby determine the longest open-reading frame encompassed by the polynucleotide sequence in order to predict the amino acid sequence encoded by the sequence. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the size and at least partial amino acid sequence of the polypeptide encoded by the nucleic acid molecule of Hillier, et al to confirm the prediction.

Accordingly, Applicants' arguments have been carefully considered but have not been found persuasive; therefore, the rejection of claims 2-8 under 35 USC § 103(a) over the disclosure of Hillier, et al is maintained.

New Grounds of Claim Rejections

Claim Rejections – 35 USC § 112

22. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 2 recite a limitation requiring the nucleic acid molecule to comprise the polynucleotide sequence of the DNA insert in ATCC Deposit No. PTA-1755, wherein said DNA insert encodes (i) the polypeptide as set forth in SEQ ID NO: 5 or (ii) the polypeptide as set forth in SEQ ID NO: 5 but with at least one amino acid substitution. While Applicants may argue that the limitation requiring the polypeptide encoded by the DNA insert to be the polypeptide of SEQ ID NO: 4 is implicitly supported by the original claims, it does not appear to be explicitly supported by the specification. On the other hand, the limitation requiring the polypeptide encoded by the DNA insert to be the polypeptide as set forth in SEQ ID NO: 5 but with at least one amino acid substitution

appears not to be implicitly or explicitly supported by the specification. Accordingly, in reply to this Office Action, Applicants may set forth such arguments, which will be carefully considered during subsequent prosecution, or else Applicants may point to particular disclosures in the specification that are believed to provide proper antecedent basis for recitation of the limitation in the claims. Otherwise, the recitation of the limitations in the claims appears to violate the written description requirement set forth under 35 USC § 112, first paragraph.

Claim 3 recites a limitation requiring the isolated nucleic acid molecule to comprise a polynucleotide sequence or a polynucleotide sequence complementary to a polynucleotide sequence that encodes a polypeptide that comprises has the amino acid sequence set forth in SEQ ID NO: 5 but with at least one modification, wherein said modification is selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, provided that said polypeptide produces an antibody that binds the polypeptide of SEQ ID NO: 5 upon injection into an animal and provided said polypeptide does not further comprise the amino acid sequence of SEQ ID NO: 22. However, there does not appear to be sufficient and proper antecedent basis in the specification for recitation of this limitation in the claim. In particular, there does not appear to be antecedent basis in the specification for recitation of SEQ ID NO: 22 in claim 3. Therefore, recitation of the limitation in claim 3 appears to violate the written description requirement set forth under 35 USC § 112, first paragraph. This issue might be resolved, however, if Applicants were able to point to particular disclosures in the specification that are believed to provide proper antecedent support for recitation of the limitation in the claim.

23. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-8 are indefinite because claims 1 and 2 recite a limitation requiring the nucleic acid molecule to comprise "the nucleotide sequence of the DNA insert in ATCC Deposit No. PTA-1755, wherein the DNA insert encodes: (i) the polypeptide as set forth

in SEQ ID NO: 5, or (ii) the polypeptide as set forth in SEQ ID NO: 5 but with at least one amino acid substitution". Recitation of the limitation renders the claims indefinite because it cannot be ascertained whether the DNA insert in ATCC Deposit No. PTA-1755 comprises a polynucleotide sequence encodes the polypeptide of SEQ ID NO: 5 or the polypeptide of SEQ ID NO: 5 but with at least one amino acid substitution. The DNA insert to which the claims refer cannot comprise a polynucleotide sequence encoding both polypeptides; rather it has to encode one or the other. However, if the DNA insert to which the claims refer encodes "the polypeptide as set forth in SEQ ID NO: 5 but with at least one amino acid substitution", then the claims are vague and indefinite since it cannot be determined which amino acid sequence the insert encodes because it cannot be determined which amino acids in the amino acid sequence set forth in SEQ ID NO: 5 have been replaced and by which other amino acids. Accordingly, one of ordinary skill in the art would not be reasonably apprised of the metes and bounds of the invention.

Claims 3-8 are indefinite because claim 3 recites the provision requiring the nucleotide sequence to encode a polypeptide that does not further comprise the amino acid sequence set forth in SEQ ID NO: 22. Recitation of the provision renders the claim indefinite because it cannot be ascertained to which amino acid sequence SEQ ID NO: 22 refers since the Sequence Listing does not include a sequence having said identification number. Accordingly, one of ordinary skill in the art would not be reasonably apprised of the metes and bounds of the invention.

24. Claims 2-8 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter that Applicants regard as their invention. Evidence that claims 2-8 fail to correspond in scope with that which Applicants regard as the invention can be found in Paper No. 14. In that paper, Applicants have stated, "the genus of variants defined by claim 2 (in which the largest member of the genus must encode a polypeptide of no more than 80 amino acids) does not encompass the nucleic acid molecule of Hillier et al. (which would encode a polypeptide of 98 amino acids)" (page 6, paragraph 1). This statement indicates that the invention is different from what is

defined in the claims because contrary to Applicants' statement, the claim 2 does encompass the nucleic acid molecule of Hillier, et al. Moreover, as the claim merely requires the isolated nucleic acid molecule to comprise a region of the polynucleotide sequence of the polynucleotide sequence set forth in SEQ ID NO: 4 that encodes a polypeptide of at least 25 amino acids, which upon injection into an animal produces an antibody that binds the polypeptide of SEQ ID NO: 5, contrary to Applicants' statement, the claim might reasonably encompass any nucleic acid molecule having a polynucleotide sequence that comprises a polynucleotide sequence that encodes at least 25 amino acids of SEQ ID NO: 5. At any rate, isolated nucleic acid molecules encoding polypeptides of more than 80 amino acids are not excluded by the claim, as Applicants' have asserted, since the nucleic acid molecule of SEQ ID NO: 4 encoding the polypeptide of SEQ ID NO: 5 is encompassed by the claim.

Conclusion

25. No claims are allowed.

26. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

27. This application contains claims 9, 12-45, and 49-59 drawn to an invention non-elected with traverse in Paper No. 9. A complete reply to the final rejection must include cancellation of non-elected claims or other appropriate action (37 CFR § 1.144). See MPEP § 821.01.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen L. Rawlings, Ph.D. whose telephone number is (703) 305-3008. The examiner can normally be reached on Monday-Thursday, alternate Fridays, 8:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony C. Caputa, Ph.D. can be reached on (703) 308-3995. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Stephen L. Rawlings, Ph.D.
Examiner
Art Unit 1642

ANTHONY C. CAPUTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

slr
May 29, 2002